Before the
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In re	
DISTRIBUTION OF SATELLITE ROYALTY FUNDS	**CONSOLIDATED DOCKET NO. 14-CRB-0011-SD (2010-13)**

SETTLING DEVOTIONAL CLAIMANTS' MOTION FOR LEAVE TO FILE SUPPLEMENTAL REBUTTAL TESTIMONY

The Settling Devotional Claimants ("SDC") move for leave to file the Supplemental Rebuttal Testimony of Erkan Erdem, Ph.D. and its attached exhibits (attached as Exhibit A). The purpose of the Supplemental Rebuttal Testimony is to address two additional exhibits based on documents produced in discovery by Commercial Television Claimants ("CTV") subsequent to the filing of written rebuttal statements.

Exhibit 2 to Dr. Erdem's Supplemental Rebuttal Testimony contains the regression results and implied shares generated by the code for CTV's satellite regression model (CTV001069) using geographically oriented SNL Kagan data when it is run on the regression data (CTV001483). The regression data at CTV001483 was responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but was not produced until September 19, 2019, after the submission of written rebuttal statements on August 26, 2019. The regression results were previously produced at CTV000916, which Dr. Erdem discussed in his rebuttal statement (¶¶ 89-96) and attached as an exhibit to his rebuttal statement (App. B). But CTV did not produce the implied shares, to which the SDC therefore did not have access until Dr. Erdem was able to run the code after CTV's production of the regression data on September 19, 2019.

SDC's Motion for Leave to File Supplemental Rebuttal Testimony   1

Exhibit 3 to Dr. Erdem's Supplemental Rebuttal Testimony contains the results of Box-Cox tests (CTV001486 and CTV001488), conducted by Professor Gregory Crawford's team on or about December 5, 2016, near the end of their testing of cable regression models. These tests were responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but were not produced until September 20, 2019, after the submission of written rebuttal statements. According to CTV's counsel's letter accompanying the document production, the document was "inadvertently omitted from [CTV's] supplemental productions of July 31, 2019 and August 16, 2019."

On September 30, 2019, about a week and a half after receiving CTV's additional productions, and as far in advance of the hearing as was reasonably possible, the SDC provided the other parties with the test results and notified the parties of their intent to offer them into evidence as exhibits. *See* Ex. B, Email from M. MacLean (Sep. 30, 2019). As is reflected in the Judges' Order Regarding Hearing Schedule and Procedures, all parties agreed not to object on grounds of timeliness to the SDC's motion for leave to file a Supplemental Rebuttal Testimony if it is filed by October 11, 2019, reserving their right to object on other appropriate grounds.

Good cause exists for the filing of Dr. Erdem's Supplemental Rebuttal Testimony and attached exhibits, because they are related exclusively to discussion of documents and data produced after the filing of written rebuttal statements in response to the Judges' Order Granting the SDC's Motion to Compel. The SDC acted promptly to inform all parties of their intention to file supplemental rebuttal testimony, and no party objects on the basis of

timeliness. *See, e.g., Order Continuing Hearing and Permitting Amended Written Rebuttal Statements*, No. 14-CRB-0010-CD (2010-13) (permitting amended written rebuttal statements related to documents and data produced by JSC following the Judges' ruling on Program Suppliers' motion to compel). The SDC complied with the stipulated deadline to file this motion, and they do not anticipate a need to delay the upcoming hearing or any deadlines.

<div align="center">

Conclusion

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For the foregoing reasons, the SDC request the Judges to grant leave to file the Supplemental Rebuttal Testimony of Erkan Erdem, Ph.D. and its attached exhibits.

Date: October 11, 2019

Respectfully submitted,

SETTLING DEVOTIONAL CLAIMANTS

/s/ Matthew J. MacLean

Arnold P. Lutzker, Esq. (D.C. Bar No. 101806)
 arnie@lutzker.com
Benjamin Sternberg (D.C. Bar No. 1016576)
 ben@lutzker.com
LUTZKER & LUTZKER LLP
1233 20th Street, NW, Suite 703
Washington, D.C. 20036
Telephone: 202-408-7600
Fax: 202-408-7677

Matthew J. MacLean (D.C. Bar No. 479257)
 matthew.maclean@pillsburylaw.com
Michael A. Warley (D.C. Bar 1028686)
 michel.warley@pillsburylaw.com
Jessica T. Nyman (D.C. Bar No. 1030613)
 jessica.nyman@pillsburylaw.com
PILLSBURY WINTHROP SHAW PITTMAN LLP
1200 Seventeenth Street, NW
Washington, D.C. 20036
Telephone: 202-663-8000
Fax: 202-663-8007
Counsel for Settling Devotional Claimants

<u>CERTIFICATE OF SERVICE</u>

I hereby certify that a copy of the foregoing was sent electronically and served by filing on eCRB or by email on October 11, 2019, to all parties registered to receive electronic notices through eCRB.

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/s/ Matthew J. MacLean
Matthew J. MacLean

</div>

Before the
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In re **DISTRIBUTION OF SATELLITE ROYALTY FUNDS**	**CONSOLIDATED DOCKET NO. 14-CRB-0011-SD (2010-13)**

DECLARATION OF MATTHEW J. MACLEAN IN SUPPORT OF SETTLING DEVOTIONAL CLAIMANTS' MOTION FOR LEAVE TO FILE SUPPLEMENTAL REBUTTAL STATEMENT

I, Matthew J. MacLean, hereby state and declare as follows, based on my personal knowledge:

1.   I am a partner in the law firm of Pillsbury Winthrop Shaw Pittman LLP, and am counsel for the Settling Devotional Claimants ("SDC") in the above-captioned proceeding.

2.   Attached hereto as Exhibit A is the Supplemental Rebuttal Statement of Erkan Erdem, Ph.D. The Supplemental Rebuttal Statement addresses two additional exhibits based on documents produced in discovery by Commercial Television Claimants ("CTV") subsequent to the filing of written rebuttal statements.

3.   Exhibit 2 to Dr. Erdem's Supplemental Rebuttal Statement contains the regression results and implied shares generated by the code for CTV's satellite regression model (CTV001069) using geographically oriented SNL Kagan data when it is run on the regression data (CTV001483). The regression data at CTV001483 was responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but was not produced until September 19, 2019, after the submission of written rebuttal statements on August 26, 2019. The regression results were previously produced at CTV000916, which Dr. Erdem discussed in his rebuttal statement (¶¶ 89-96) and attached as an

exhibit to his rebuttal statement (App. B). But CTV did not produce the implied shares, to which the SDC therefore did not have access until Dr. Erdem was able to run the code after CTV's production of the regression data on September 19, 2019.

4.	Exhibit 3 to Dr. Erdem's Supplemental Rebuttal Testimony contains the results of Box-Cox tests (CTV001486 and CTV001488), conducted by Professor Gregory Crawford's team on or about December 5, 2016, near the end of their testing of cable regression models. These tests were responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but were not produced until September 20, 2019, after the submission of written rebuttal statements. According to CTV's counsel's letter accompanying the document production, the document was "inadvertently omitted from [CTV's] supplemental productions of July 31, 2019 and August 16, 2019."

5.	On September 30, 2019, about a week and a half after receiving CTV's additional productions, and as far in advance of the hearing as was reasonably possible, I provided the other parties with the test results and notified the parties of the SDC's intent to offer them into evidence as exhibits. Attached hereto as Exhibit B is the email chain in which I notified the other parties of the SDC's intent to submit the two exhibits. CTV objected to the submission of exhibits in the absence of written testimony, but all parties agreed not to object on grounds of timeliness to the SDC's motion for leave to file a supplemental rebuttal statement if it is filed by October 11, 2019, reserving their right to object on other appropriate grounds.

I hereby declare under penalty of perjury under the laws of the United States that the foregoing is true and accurate.   Executed October 11, 2019, in McLean, Virginia.

	/s/ *Matthew J. MacLean*
Matthew J. MacLean

EXHIBIT A

SUPPLEMENTAL REBUTTAL TESTIMONY OF ERKAN ERDEM, Ph.D.

October 11, 2019

I.   Introduction

1   My name is Erkan Erdem. I have previously submitted Amended Testimony and Rebuttal Testimony in this proceeding.[1] The Settling Devotional Claimants (SDC) have asked me to review and comment on the Commercial Television Claimants (CTV) production after the submission of my Rebuttal Testimony on August 26, 2019. In the sections that follow, I present supplemental testimony based on my review. A list of materials considered is attached as **Exhibit 1**.

II.   CTV satellite regression

2   In my Rebuttal Testimony, I explained that CTV had produced satellite regression results (CTV000916) in its production of July 31, 2019, that appeared "more similar to Professor Crawford's cable regression" because they appeared to have been "conducted at a level equivalent or similar to the subscriber group" level from the cable proceeding.[2] On August 16, 2019, CTV produced the computer code file associated with those regression results (CTV001069). Later, on September 19, 2019, CTV produced the underlying regression data file (CTV001483) that allowed me to run CTV's code.

3   The code in CTV001069 indicates that the data file used in running the code is "Regression data geographic info updated.dta" which is the name of the file produced in CTV001483. Note that I cannot determine how the regression data in CTV001483 was created without all of the underlying data files and codes used to create the dataset. CTV has not produced all of those files and codes.

4   After running CTV's computer code using CTV's regression data file, I was able to exactly replicate the satellite regression results from the initial CTV production.[3] This led me to conclude that CTV consultants must have used the data file CTV001483 produced on September 19, 2019 to run the regression code CTV001069 produced on August 16, 2019

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[1] *See*, *In re Distribution of Satellite Royalty Funds*, Amended Testimony of Erkan Erdem, Ph.D. (June 7, 2019); *In re Distribution of Satellite Royalty Funds*, Rebuttal Testimony of Erkan Erdem, Ph.D. (August 26, 2019) ("Erdem Rebuttal Testimony").

[2] Erdem Rebuttal Testimony, at ¶¶ 89-92.

[3] *See* CTV000916 and "Full regression results.xlsx" in my backup work product.

and obtain the regression results CTV000916 produced on July 31, 2019.[4] However, I noticed that in addition to generating the regression results file that CTV had already produced, the CTV code file also generated an additional output data file with share results, which CTV has not produced. The output file is attached as **Exhibit 2**. The satellite share results, generated by running CTV's code using CTV's data, are displayed below:

Table 1: Regression using CTV Production Data and Code

Estimation	Year	PS	Sports	CTV	Devotional
Regression using all years	2010	84.08%	3.30%	0.00%	12.62%
Regression using all years	2011	85.37%	3.34%	0.00%	11.29%
Regression using all years	2012	83.18%	3.74%	0.00%	13.08%
Regression using all years	2013	83.67%	3.68%	0.00%	12.66%
Regression using all years	**2010-2013**	**84.10%**	**3.51%**	**0.00%**	**12.40%**

5   As Table 1 shows, the CTV share resulting from the regression is zero (due to a negative and statistically significant coefficient estimated for the CTV minutes variable), while the devotional share is more than 10 percent. The coefficients are statistically significant for all claimants. Again, CTV did not produce these results, even though they are generated by the same computer code file, using the same data, as the regression output that CTV produced on July 31, 2019.

6   The underlying regression data produced on September 19, 2019 appear to be organized in a way that is more similar to Professor Crawford's cable regression data than the satellite statement of account data obtained from Cable Data Corporation.[5] Specifically, rather than being organized at the station and carrier level, the regression data are geographically organized presenting royalties, subscribers, total minutes for each claimant, number of distant stations, and number of local stations by designated market area (DMA) and carrier.[6]

7   Regression data with geographic detail has been used in Waldfogel-type regressions in previous proceedings and presented to the Judges. Two notable examples are the regression

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[4] Unless otherwise specified, the files from these dates referred to in this Section II correspond to the Bates number cited here.

[5] CTV previously produced their version of satellite statement of account regression data in "subscribers_runtime_by_carrier_station_month.dta" of the production for Dr. Bennett's March 22, 2019 report. This file was used as an input in the regression code file later produced as CTV001070.

[6] Technically, the data in CTV001483 are uniquely identified for each combination of headend_id, year, and month. However, the variable "headend_id" is uniquely identified for 365 of 366 DMA-carrier combinations in the data. So, for 365 of 366 DMA-carrier combinations, the data are uniquely identified for each combination of DMA, carrier, year, and month. For DMA number 581 on DISH, there are two possible values of headend_id, which is the only thing preventing the data from being uniquely identified by DMA, carrier, year, and month. *See* "CTV001483_summary.log" in my backup work product.

of Dr. Joel Waldfogel in the 2004-2005 proceeding, which was at the system level, and the regression of Professor Crawford in the 2010-2013 proceeding, which was at the subscriber group level.[7] Both cable systems and cable subscriber groups (within a system) are organized geographically—presenting royalties, subscribers, total minutes for each claimant, number of distant stations, number of local stations, and other control variables by geography.[8,9] More importantly, regardless of the level of geographic detail, the data produced on September 19, 2019, would allow an expert to run a Waldfogel-type regression while controlling for geography, even if it is not the exact same model that Dr. Crawford applied to the available data in the cable proceeding.

8   Furthermore, after reviewing the regression data produced on September 19, 2019, I was able to observe that CTV's regression uses fixed effects and clustered standard errors at the DMA and carrier level.[10] Although it was not identical to Dr. Crawford's regression model, it meets the criteria for a Waldfogel-type regression, allows for fixed effects at a disaggregated geographical level, and has geographically-oriented covariates. The results in Table 1 above were unfavorable to CTV, and CTV experts did not present them.

9   Dr. Heeb in his written statement argued that a regression approach in satellite was "infeasible" because:

> "[I]n the cable context, geographic covariates can be constructed to control both for demographic differences and for varying program options across groups of consumers. The satellite data do not provide any information about the geographic locations of the subscribers, thus precluding the ability to analyze the data across these dimensions."[11]

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[7] *In re Distribution of Cable Royalty Funds,* Docket No. 2007-3 CRB CD 2004-2005, *Written Direct Testimony of the Commercial Television Claimants*, Statement of Joel Waldfogel (June 1, 2009). *In re Distribution of Cable Royalty Funds,* Docket No. 14-CRB-0010-CD, *Corrected Written Direct Testimony of the Commercial Television Claimants Group*, Corrected Written Direct Testimony of Gregory S. Crawford, Ph.D. (Apr. 11, 2017) ("Crawford 2010-2013 Cable Corrected Direct Testimony").

[8] For instance the cable data contain a "prime_dma" variable corresponding to the primary DMA served by the cable system. *See* "SG regression dataset (collapsed).dta" in my June 7, 2019 production.

[9] "A cable system is a facility… designed to provide cable service which includes video programming and which is provided to multiple subscribers within a community." Federal Communications Commission, "Cable Television", https://www.fcc.gov/media/engineering/cable-television (obtained October 8, 2019).

[10] Specifically, the code file produced August 16, 2019 groups the fixed effects and clustered standard errors by the "headend_id" variable. *See* footnote 6 for a discussion of the "headend_id" variable.

[11] *In re Distribution of Satellite Royalty Funds*, Docket No. 14-CRB-0011-SD (2010-2013), *Corrected Written Direct Testimony of the Commercial Television Claimants Group*, Corrected Testimony of Randal D. Heeb, PhD. (June 7, 2019), at 3.

I previously testified that this passage is "nonsense," in part because the cable data also do not contain "information about the geographic locations of the subscribers,"[12] and Professor Crawford's regression model did not control for "demographic differences"[13] or for "varying program options across groups of subscribers."[14] Indeed, the cable data do not even permit the analyst to distinguish between subscriber groups that are in the same or different DMAs (meaning that one cannot tell if a signal retransmitted on a distant basis to one subscriber group was retransmitted on a local basis to another subscriber group).[15]

10 However, the satellite regression data that was prepared by CTV and produced very recently to other parties include some form of information by DMA.[16] Although I am not provided with sufficient information (e.g., input data files and computer code) to be able to describe how the data was compiled, what I observe appears to contradict with Dr. Heeb's statement that a regression similar to Professor Crawford's in cable was not feasible in satellite. Indeed, the regression specification is very similar to Professor Crawford's specification, and even appears to be estimated using the same code. (Of course, the approach does not provide a measure of value, for exactly the same reasons that Professor Crawford's regression did not provide a measure of value.)

III. Box-Cox test

11 In my rebuttal testimony, I discussed how CTV experts tested different relationships between royalty fees and minute variables, but that there did not appear to be a Box-Cox test in the documents produced.[17] I also cited the following testimony from Professor Crawford regarding how the Box-Cox allegedly influenced his selection of a log-linear model:

> Q. Did you actually do a regression in which you – in which you used the level fees paid as a dependent variable?
>
> A. I honestly don't recall, but – so I don't remember, but because I think, conceptually, we thought the log percent – you know, because of the economic foundations, the log approach was sensible, so we said, okay, you know, let's try Box-Cox, you know, see what it says and then – you know, as you know, there's this parameter in a Box-Cox – maybe not everyone knows, but there's a parameter

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[12] Erdem Rebuttal Testimony, at ¶¶ 91-92.

[13] *Ibid,* at ¶¶ 91-92, ¶ 99.

[14] *Ibid,* at ¶¶ 91-92, ¶ 98.

[15] *Ibid,* at ¶ 81, ¶¶ 98-99.

[16] *See* CTV001483.

[17] *See* Erdem Rebuttal Testimony, Section II.A.1.b.

in a Box-Cox model which varies between zero and one. And if the parameter is closer to zero, that suggests it should be a log model. And that's what we found, and so that's why we stuck with it.[18]

12 On September 20, 2019, CTV produced computer code files and results for Box-Cox tests that were apparently conducted on December 5, 2016.[19] I am also unable to run the computer code files in the production to confirm CTV's results because, to my knowledge, CTV has not provided the "regression data.dta" data file necessary to run the computer code.

13 A Box-Cox model is a more general form of the linear model which allows the dependent variable to be transformed by a parameter known as *theta (θ)*. In a simple linear regression model (with only one independent variable for simplicity), the more general equation is given by:

$$y_i^{(\theta)} = \beta_0 + \beta_1 x_i^{(\lambda)} + \epsilon_i$$

where the subscript *i* represents different observations in the data, θ and λ would be unknowns to be estimated, ϵ is the unknown error term. When lambda is set to 1 (and hence not estimated), the independent variables, by choice, are not subject to a transformation.

14 The optimal value of *theta* is calculated using maximum likelihood estimation. *Theta* can be expected to vary between negative two and positive two, producing many different possible functional forms.[20] The unique case of *theta* equal to one corresponds to a linear (or level-level specification assuming that only the dependent variable is transformed), while a *theta* equal to zero corresponds to a log-level specification.[21] Econometricians can conduct hypothesis tests for these values of *theta* to determine if these specifications would be acceptable.

15 The results of the Box-Cox test produced on September 20, 2019, are attached hereto as **Exhibit 3**. The test results show that Dr. Crawford and his team estimated a *theta* of 0.17 on December 5, 2016[22] — which is the same value that Professor Crawford presented in his report.[23] Professor Crawford's testimony indicates that he conducted a "test" in which he

[18] Tr., No. 14-CRB-0010-CD (2010-13), Vol. VII, Feb. 28, 2018 (Crawford), at 1641:11-1642:2.
[19] CTV001485 – CTV001488.
[20] Greene, William H. Econometric Analysis, 4th ed. New Jersey: Prentice Hall (2000), at 445.
[21] *Ibid*, at 327.
[22] CTV001486 and CTV001488.
[23] Crawford 2010-2013 Cable Corrected Direct Testimony, at 33.

calculates *theta*, and chooses his model specification based on whether *theta* is closer to zero or one.[24]

16 The September 20, 2019 production also includes results of hypothesis tests, which indicate that both the linear (*theta* = 1) and log-level (*theta* = 0) versions of the model are found to be unsuitable. The test results indicate that both hypotheses, *theta* = 1 and *theta* = 0, produce p-values of 0.000, indicating a strong rejection of both proposed specifications.[25]

17 The Box-Cox test in Professor Crawford's work focuses on a very specific form (of transforming the dependent variable while keeping the independent variables untransformed). *Theta* = 0.17, for example, is very close to a sixth-root transformation, and is not especially close to a log-transformation. It is worth noting that there could be any number of functional forms that would have offered a better fit to the data. Professor Crawford investigated other specifications throughout his model selection process, including a quadratic transformation to the minute variables.[26] A Box-Cox test, especially the version that is implemented by Professor Crawford that leaves the independent variables untransformed, does nothing to address the possibility of other forms or transformations.

18 Another important point—perhaps the most important point—is that the Box-Cox tests, allegedly conducted on December 5, 2016, occurred very late in the model selection process, after Professor Crawford and his team had already engaged in months of testing. Based on the CTV production, CTV's testing began no later than July 11, 2016 and concluded no earlier than December 13, 2016.[27] Professor Crawford's initial report was submitted on December 22, 2016.[28]

19 Based on my review of the alleged December 5th, 2016 results, including the fact that both linear and log-level models were rejected by the Box-Cox tests, I conclude that Professor Crawford's decision to use a log-level specification based on the results of his Box-Cox test was questionable and an afterthought — especially given that Professor Crawford's team

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[24] According to Professor Crawford's report, "A Box-Cox test specifies the dependent variable in a regression to depend on a parameter whose range of values includes both the linear and log-linear models: if the estimated parameter is closer to 1, then a linear model is preferred by the data; if the estimated parameter is closer to 0, then a log-linear model is preferred." Crawford 2010-2013 Cable Corrected Direct Testimony, at 32.
[25] CTV001486 and CTV001488.
[26] CTV production indicates CTV tested the level-quadratic and log-quadratic functional forms. CTV000857-58, CTV000874, CTV000876, CTV000878-79, CTV0008881, CTV0008883, CTV000900, CTV000910-11.
[27] CTV000857 – CTV000915.
[28] Crawford 2010-2013 Cable Corrected Direct Testimony.

focused on log-level regression models over a month before the formal Box-Cox test was performed.[29]

IV. Declaration of Erkan Erdem

20 I declare under penalty of perjury that the foregoing testimony is true and correct, and of my personal knowledge.

Erkan Erdem

10/11/2019

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[29] Erdem Rebuttal Testimony.

Exhibit 1: Materials Considered

I have obtained, reviewed, and used the following documents and data files during the preparation of this testimony:

- CTV000857 – CTV000916, CTV001069, CTV001070, CTV001483, CTV001485 – CTV001488.

- Federal Communications Commission, "Cable Television", https://www.fcc.gov/media/engineering/cable-television (obtained October 8, 2019).

- Greene, William H. Econometric Analysis, 4th ed. New Jersey: Prentice Hall (2000).

- *In re Distribution of Cable Royalty Funds,* Docket No. 14-CRB-0010-CD, *Corrected Written Direct Testimony of the Commercial Television Claimants Group*, Corrected Written Direct Testimony of Gregory S. Crawford, Ph.D.

- *In re Distribution of Cable Royalty Funds,* Docket No. 2007-3 CRB CD 2004-2005, *Written Direct Testimony of the Commercial Television Claimants*, Statement of Joel Waldfogel (June 1, 2009).

- *In re Distribution of Satellite Royalty Funds*, Amended Testimony of Erkan Erdem, Ph.D. (June 7, 2019)

- *In re Distribution of Satellite Royalty Funds*, Docket No. 14-CRB-0011-SD (2010-2013), *Corrected Written Direct Testimony of the Commercial Television Claimants Group*, Corrected Testimony of Randal D. Heeb, PhD. (June 7, 2019)

- *In re Distribution of Satellite Royalty Funds*, Rebuttal Testimony of Erkan Erdem, Ph.D. (August 26, 2019).

- Tr., No. 14-CRB-0010-CD (2010-13), Vol. VII, Feb. 28, 2018 (Crawford).

Exhibit 2: CTV Satellite Regression Output

estimation	year	share_sup	share_se_sup	share_spo	share_se_spo	share_com	share_se_com	share_dev	share_se_dev
Regression by year	2010	.	.	.	.	.	.	.	.
Regression by year	2011	.	.	.	.	.	.	.	.
Regression by year	2012	.	.	.	.	.	.	.	.
Regression by year	2013	.	.	.	.	.	.	.	.
Regression by year	2010-2013	.	.	.	.	.	.	.	.
Regression using all years	2010	.8407853	.0133223	.0329905	.0092236	0	0	.1262242	.015341
Regression using all years	2011	.8537193	.0122891	.0333618	.0092976	0	0	.1129189	.013931
Regression using all years	2012	.831781	.013805	.0373821	.0104155	0	0	.1308368	.0158952
Regression using all years	2013	.83667	.0134648	.0367572	.0102385	0	0	.1265728	.0154392
Regression using all years	2010-2013	.8409652	.0132061	.0350798	.0097823	0	0	.123955	.0151364

me_sup	me_se_sup	me_spo	me_se_spo	me_com	me_se_com	me_dev	me_se_dev
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.1846688	.0445908	.2480295	.0432359	-.8396108	.1786867	2.660437	.7136415
.1793503	.0433065	.2408862	.0419907	-.8154298	.1735405	2.583816	.6930884
.1492953	.0360494	.2005192	.034954	-.6787825	.1444591	2.150828	.5769427
.141246	.0341057	.1897081	.0330695	-.6421856	.1366705	2.034865	.5458366
.1626538	.039275	.2184611	.0380816	-.739518	.1573849	2.343278	.6285659

coef_sup	coef_se_sup	coef_spo	coef_se_spo	coef_com	coef_se_com	coef_dev	coef_se_dev
5.72e-06	2.09e-06	3.83e-06	4.76e-06	-.0000261	9.34e-06	.0000951	.0000435
5.08e-06	1.84e-06	-.0000136	4.94e-06	-.0000206	7.08e-06	.0001555	.0000408
.0000115	3.32e-06	.0000102	9.06e-06	-.0000455	.0000111	.0000879	.0000422
8.99e-06	2.25e-06	9.01e-06	2.59e-06	-.0000311	9.18e-06	.0001539	.0000417
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296
7.67e-06	1.85e-06	.0000103	1.80e-06	-.0000349	7.42e-06	.0001105	.0000296

Exhibit 3: CTV Box-Cox Results

CTV001486

Description	Theta	Log-likelihood	df	N	likelihood ratio test	p-value	AIC	BIC
Full model	0.17	-267,219	39	26,126	-	-	534,516	534,835
Restricted model (log-linear)	0	-269,052	39	26,126	3,666	0	538,182	538,501
Restricted model (linear)	1	-312,158	39	26,126	89,878	0	624,394	624,713

	OLS	FE-SYS	FE-SOA
Chow test (p-value):	0.67	0.10	0.88

CTV001488

Description	Theta	Log-likelihood	df	N	likelihood ratio test	p-value	AIC	BIC
Full model	0.17	-267,219	39	26,126	-	-	534,516	534,835
Restricted model (log-linear)	0	-269,052	39	26,126	3,666	0	538,182	538,501
Restricted model (linear)	1	-312,158	39	26,126	89,878	0	624,394	624,713

	OLS	FE-SOA
Chow test (Test statistics):	0.88	0.66
Chow test (Degree of freedom):	(7368,18)	(7368,18)
Chow test (Critical value):	1.92	1.92
Chow test (p-value):	0.60	0.86

Remarks:

1. Degree of freeom 1 (7,368) is the number of clusters (SOA)
2. Degree of freedom 2 (18) is the number of claimant groups (6 claimants) times number of year minus 1 (3)

EXHIBIT B

From:	Kientzle, Michael <Michael.Kientzle@arnoldporter.com>
Sent:	Thursday, October 3, 2019 4:47 PM
To:	MacLean, Matthew J.; Mace, Ann
Cc:	Stewart, John; Plovnick, Lucy; Arnie Lutzker; Ervin, David; Adkins, Bryan L.; Cantor, Daniel A.; Philip R. Hochberg; ritchie.thomas@squirepb.com; Olaniran, Greg; Dominique, Alesha; Lichtman, Leo; Williams, Matthew; Warley, Michael A.; Nyman, Jessica T.; Stute, David J.; Ben Sternberg
Subject:	RE: Call re Schedule for Satellite Hearing

Matt,

Given your agreement to the October 11 deadline, JSC also will not oppose a motion for leave to amend Dr. Erdem's written rebuttal testimony to incorporate these exhibits on timeliness grounds. JSC reserves the right to raise any other objection to the motion or to any amended rebuttal testimony.

Thanks
Mike

From: MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>
Sent: Wednesday, October 2, 2019 6:50 PM
To: Mace, Ann <AMace@crowell.com>
Cc: Stewart, John <JStewart@crowell.com>; Plovnick, Lucy <lhp@msk.com>; Kientzle, Michael <Michael.Kientzle@arnoldporter.com>; Arnie Lutzker <arnie@lutzker.com>; Ervin, David <DErvin@crowell.com>; Adkins, Bryan L. <Bryan.Adkins@arnoldporter.com>; Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>; Philip R. Hochberg <PHochberg@shulmanrogers.com>; ritchie.thomas@squirepb.com; Olaniran, Greg <goo@msk.com>; Dominique, Alesha <amd@msk.com>; Lichtman, Leo <lml@msk.com>; Williams, Matthew <mxw@msk.com>; Warley, Michael A. <michael.warley@pillsburylaw.com>; Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>; Stute, David J. <david.stute@pillsburylaw.com>; Ben Sternberg <ben@lutzker.com>
Subject: Re: Call re Schedule for Satellite Hearing

External E-mail

Ann,

Thank you for working with us on this. We will accept the Oct 11 deadline.

JSC - Will you consent?

Matt

Sent from my iPhone

Matthew J. MacLean | Partner
Pillsbury Winthrop Shaw Pittman LLP
1200 Seventeenth Street NW | Washington, DC 20036-3006
t +1.202.663.8183
matthew.maclean@pillsburylaw.com | website bio

On Oct 2, 2019, at 5:50 PM, Mace, Ann <AMace@crowell.com> wrote:

1

Matt,

CTV objects to these exhibits in the absence of their inclusion in an amended written rebuttal statement. CTV will not oppose a motion for leave to amend Dr. Erdem's written rebuttal testimony to add the two attached exhibits on timeliness grounds, if the amendment is filed by October 11. This representation is made without waiver of CTV's right to object to any evidence that is introduced at trial.

Ann

Ann Mace
Crowell & Moring LLP | www.crowell.com
1001 Pennsylvania Avenue NW
Washington, DC 20004
amace@crowell.com
202.624.2711 | Fax: 1.202.628.5116

From: MacLean, Matthew J. [mailto:matthew.maclean@pillsburylaw.com]
Sent: Monday, September 30, 2019 4:24 PM
To: Stewart, John; Plovnick, Lucy
Cc: Kientzle, Michael; Arnie Lutzker; Mace, Ann; Ervin, David; Adkins, Bryan L.; Cantor, Daniel A.; Philip R. Hochberg; ritchie.thomas@squirepb.com; Olaniran, Greg; Dominique, Alesha; Lichtman, Leo; Williams, Matthew; Warley, Michael A.; Nyman, Jessica T.; Stute, David J.; Ben Sternberg
Subject: RE: Call re Schedule for Satellite Hearing

External Email

All,

In support of the SDC's written rebuttal statement, we plan to offer the attached two additional exhibits at the hearing.

The first is CTV001488, which was responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but was not produced until September 20, 2019, after the submission of written rebuttal statements.

The second is the output from the code at CTV001069 when it is run on the regression data at CTV001483. The regression data at CTV001483 was responsive to the SDC's discovery requests following written direct statements, and to the Judges' order granting the SDC's motion to compel, but was not produced until September 19, 2019, after the submission of written rebuttal statements on August 26, 2019. The output includes regression results and implied shares from one of CTV's satellite regression models using SNL Kagan data. The regression results were previously produced at CTV000916, which Dr. Erdem discusses in his rebuttal statement (¶¶ 89-96) and attaches as an exhibit to his rebuttal statement (App. B). But CTV did not produce the implied shares, which we therefore did not have access to until Dr. Erdem was able to run the code after CTV's production of the regression data on September 19, 2019.

We do not intend to seek to submit amended rebuttal testimony addressing these exhibits unless there is an objection to our submission of these two exhibits in oral testimony. Would you please let me know by the end of the day on Wednesday if anybody will object to these exhibits in the absence of their

inclusion in an amended written rebuttal statement? Or, if anybody has such an objection, will you consent to a motion for leave to amend Dr. Erdem's written rebuttal testimony to add these two exhibits? *See, e.g., Order Continuing Hearing and Permitting Amended Written Rebuttal Statements*, No. 14-CRB-0010-CD (2010-13) (permitting amended written rebuttal statements related to documents and data produced by JSC after the Judges' ruling on Program Suppliers' motion to compel).

Matt

Matthew J. MacLean | Partner
Pillsbury Winthrop Shaw Pittman LLP
1200 Seventeenth Street NW | Washington, DC 20036-3006
t +1.202.663.8183
matthew.maclean@pillsburylaw.com | website bio

From: MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>
Sent: Wednesday, September 25, 2019 3:16 PM
To: Stewart, John <JStewart@crowell.com>; Plovnick, Lucy <lhp@msk.com>
Cc: Kientzle, Michael <Michael.Kientzle@arnoldporter.com>; Arnie Lutzker <arnie@lutzker.com>; Mace, Ann <AMace@crowell.com>; Ervin, David <DErvin@crowell.com>; Adkins, Bryan L. <Bryan.Adkins@arnoldporter.com>; Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>; Philip R. Hochberg <PHochberg@shulmanrogers.com>; ritchie.thomas@squirepb.com; Olaniran, Greg <goo@msk.com>; Dominique, Alesha <amd@msk.com>; Lichtman, Leo <lml@msk.com>; Williams, Matthew <mxw@msk.com>; Warley, Michael A. <michael.warley@pillsburylaw.com>; Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>; Stute, David J. <david.stute@pillsburylaw.com>; Ben Sternberg <ben@lutzker.com>
Subject: RE: Call re Schedule for Satellite Hearing

Here is our stipulation from last hearing.

From: MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>
Sent: Wednesday, September 25, 2019 11:12 AM
To: Stewart, John <JStewart@crowell.com>; Plovnick, Lucy <lhp@msk.com>
Cc: Kientzle, Michael <Michael.Kientzle@arnoldporter.com>; Arnie Lutzker <arnie@lutzker.com>; Mace, Ann <AMace@crowell.com>; Ervin, David <DErvin@crowell.com>; Adkins, Bryan L. <Bryan.Adkins@arnoldporter.com>; Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>; Philip R. Hochberg <PHochberg@shulmanrogers.com>; ritchie.thomas@squirepb.com; Olaniran, Greg <goo@msk.com>; Dominique, Alesha <amd@msk.com>; Lichtman, Leo <lml@msk.com>; Williams, Matthew <mxw@msk.com>; Warley, Michael A. <michael.warley@pillsburylaw.com>; Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>; Stute, David J. <david.stute@pillsburylaw.com>; Ben Sternberg <ben@lutzker.com>
Subject: RE: Call re Schedule for Satellite Hearing

Thanks, everyone. I will circulate a calendar invitation for a call at 3:00 p.m. The conference line will be:

877-211-3621
Passcode: 6033303704

Matthew J. MacLean | Partner
Pillsbury Winthrop Shaw Pittman LLP
1200 Seventeenth Street NW | Washington, DC 20036-3006
t +1.202.663.8183
matthew.maclean@pillsburylaw.com | website bio

From: Stewart, John <JStewart@crowell.com>
Sent: Wednesday, September 25, 2019 10:29 AM
To: Plovnick, Lucy <lhp@msk.com>
Cc: Kientzle, Michael <Michael.Kientzle@arnoldporter.com>; Arnie Lutzker <arnie@lutzker.com>; Mace, Ann <AMace@crowell.com>; Ervin, David <DErvin@crowell.com>; Adkins, Bryan L. <Bryan.Adkins@arnoldporter.com>; Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>; Philip R. Hochberg <PHochberg@shulmanrogers.com>; ritchie.thomas@squirepb.com; Olaniran, Greg <goo@msk.com>; Dominique, Alesha <amd@msk.com>; Lichtman, Leo <lml@msk.com>; Williams, Matthew <mxw@msk.com>; MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>; Warley, Michael A. <michael.warley@pillsburylaw.com>; Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>; Stute, David J. <david.stute@pillsburylaw.com>; Ben Sternberg <ben@lutzker.com>
Subject: Re: Call re Schedule for Satellite Hearing

We can be on a call at 3:00.

Thanks.

John I. Stewart, Jr.
Crowell & Moring LLP
1001 Pennsylvania Avenue, NW
Washington, DC 20004
Sent from my iPhone

On Sep 24, 2019, at 6:41 PM, Plovnick, Lucy <lhp@msk.com<mailto:lhp@msk.com>> wrote:

External Email

Program Suppliers are also available for a call tomorrow from 2-4.

Lucy

From: Kientzle, Michael <Michael.Kientzle@arnoldporter.com<mailto:Michael.Kientzle@arnoldporter.com>>
Date: Tuesday, Sep 24, 2019, 5:19 PM
To: Arnie Lutzker <arnie@lutzker.com<mailto:arnie@lutzker.com>>, Mace, Ann <AMace@crowell.com<mailto:AMace@crowell.com>>, 'Stewart, John' <JStewart@crowell.com<mailto:JStewart@crowell.com>>, Ervin, David (DErvin@crowell.com<mailto:DErvin@crowell.com>) <DErvin@crowell.com<mailto:DErvin@crowell.com>>, Adkins, Bryan L.

<Bryan.Adkins@arnoldporter.com>>, Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>>, Philip R. Hochberg <PHochberg@shulmanrogers.com>>, ritchie.thomas@squirepb.com <ritchie.thomas@squirepb.com>>, Olaniran, Greg <goo@msk.com>>, Plovnick, Lucy <lhp@msk.com>>, Dominique, Alesha <amd@msk.com>>, Lichtman, Leo <lml@msk.com>>
Cc: MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>>, Warley, Michael A. <michael.warley@pillsburylaw.com>>, Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>>, Stute, David J. <david.stute@pillsburylaw.com>>, Ben Sternberg <ben@lutzker.com>>
Subject: RE: Call re Schedule for Satellite Hearing

Thanks Arnie. We agree it makes sense to discuss. JSC is available tomorrow between 2-4 as well.

From: Arnie Lutzker <arnie@lutzker.com>>
Sent: Tuesday, September 24, 2019 4:30 PM
To: Mace, Ann <AMace@crowell.com>>; 'Stewart, John' <JStewart@crowell.com>>; Ervin, David (DErvin@crowell.com) <DErvin@crowell.com>>; Kientzle, Michael <Michael.Kientzle@arnoldporter.com>>; Adkins, Bryan L. <Bryan.Adkins@arnoldporter.com>>; Cantor, Daniel A. <Daniel.Cantor@arnoldporter.com>>; Philip R. Hochberg <PHochberg@shulmanrogers.com>>; ritchie.thomas@squirepb.com>; Olaniran, Greg <goo@msk.com>>; Plovnick, Lucy <lhp@msk.com>>; Dominique, Alesha (amd@msk.com) <amd@msk.com>>; lml@msk.com>
Cc: MacLean, Matthew J. <matthew.maclean@pillsburylaw.com>>; Warley, Michael A. <michael.warley@pillsburylaw.com>>; Nyman, Jessica T. <jessica.nyman@pillsburylaw.com>>; Stute, David J. <david.stute@pillsburylaw.com>>; Ben Sternberg <ben@lutzker.com>>
Subject: Call re Schedule for Satellite Hearing

External E-mail
With the satellite hearing now less than a month away, even though the Judges haven't reached out to us, it seems a good idea for the parties to talk about our thoughts on the schedule for the hearing – particularly how much time we'll need for the hearing, and whether there are any witnesses whose testimony should rest on the papers without cross. Both Matt and I have some travel coming up (I'm out Thursday, Friday of this week, and Monday next, Matt Tues-Wed of next week), so we think having a call tomorrow would make sense. If that works, let's see if we can come up with a mutually convenient time. Can I suggest between 2-4pm tomorrow? Let us know your thoughts.
Arnie

Arnold P. Lutzker
Lutzker & Lutzker LLP

1233 20th Street, NW
Suite 703
Washington, DC 20036
Telephone: 202-408-7600 ext. 1
Cell: 202-321-9156
Fax: 202-408-7677
Email: arnie@lutzker.com<mailto:arnie@lutzker.com>
Website: www.lutzker.com<https://urldefense.proofpoint.com/v2/url?u=http-3A__www.lutzker.com_&d=DwMF-g&c=Anw7wKLFSGyH7zEzIqo-zgMRy5HE-AH-SibmOy3H7xE&r=i9e5ZDE946oA5z5d1Rtyn_IItZxq7-F1x3U7rx2f53E&m=w0grPjj9HWWggATdN72NIjrfRqCj4Rzra0xp412iIqE&s=diB1MubktgjwBMxXI5828EFJPP9b_sCL3ZXfTSB8rpc&e=>

Be sure to check out our new firm website –
https://www.lutzker.com<https://urldefense.proofpoint.com/v2/url?u=https-3A__www.lutzker.com&d=DwMF-g&c=Anw7wKLFSGyH7zEzIqo-zgMRy5HE-AH-SibmOy3H7xE&r=i9e5ZDE946oA5z5d1Rtyn_IItZxq7-F1x3U7rx2f53E&m=w0grPjj9HWWggATdN72NIjrfRqCj4Rzra0xp412iIqE&s=nqJ1ZjTkJ7YvhCOvOttKwCIBSF6s-iwZEPvb8NpZYgQ&e=>

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Proof of Delivery

I hereby certify that on Friday, October 11, 2019, I provided a true and correct copy of the Motion for Leave to File Supplemental Rebuttal Testimony to the following:

Broadcaster Claimants Group (CTV), represented by David J Ervin, served via Electronic Service at dervin@crowell.com

Spanish Language Producers, represented by Brian D Boydston, served via Electronic Service at brianb@ix.netcom.com

Joint Sports Claimants, represented by Michael E Kientzle, served via Electronic Service at michael.kientzle@apks.com

MPA-represented Program Suppliers, represented by Matthew Williams, served via Electronic Service at mxw@msk.com

Multigroup Claimants, represented by Brian D Boydston, served via Electronic Service at brianb@ix.netcom.com

Major League Soccer, LLC, represented by Edward S. Hammerman, served via Electronic Service at ted@copyrightroyalties.com

Signed: /s/ Matthew J MacLean